

- 127 -

WHAT IS CLAIMED IS:

1. A water soluble hybrid phthalocyanine derivative.
2. A derivative of claim 1 wherein the derivative is silicon[di(1,6-diphenyl-2,3 naphthalocyanine)]diphthalocyanine bis [poly(ethylene glycol) methyl ether].
- 5 3. A derivative of claim 1 wherein the derivative is silicon[di(1,6-diphenyl-2,3-naphthalocyanine)]diphthalocyanine bis[poly(ethylene glycol)].
4. A derivative of claim 1 wherein the derivative is silicon [di(1,6-diphenyl-2,3-naphthalocyanine)] diphthalocyanine [poly(ethylene glycol)][poly(ethylene glycol)acetylthiopropionate].
- 10 5. A derivative of claim 1 wherein the derivative is silicon[di(1,6-diphenyl 2,3-naphthalocyanine)]di(2,3-dicarboxyphthalocyanine)dihydroxide.
6. A derivative of claim 1 wherein the derivative is silicon[di(1,6-diphenyl 2,3-naphthalocyanine)]di(2,3-dicarboxyphthalocyanine) bis[poly(ethylene glycol)methyl ether].
- 15 7. A derivative of claim 1 wherein the derivative is sulfo silicon di[(1,6-diphenyl-2,3-naphthalocyanine] diphthalocyanine dihydroxide.
8. A derivative of claim 1 wherein the derivative is silicon [di(1,6-diphenyl-2,3-naphthalocyanine)] diphthalocyanine [poly(ethylene glycol)][poly(ethylene glycol)thiopropionate].
- 20 9. A derivative of claim 1 wherein the derivative is sulfo silicon di[(1,6-diphenyl-2,3-naphthalocyanine]diphthalocyanine[-2-butyrothiolactone)amidomethoxide]hydroxide.

- 128 -

10. A derivative of claim 1 wherein the derivative is sulfo silicon di[(1,6-diphenyl-2,3-naphthalocyanine)diphthalocyanine[N-(cysteine)amidomethoxide]hydroxide.

11. A derivative of claim 1 wherein the derivative is silicon tetra-tert-butylphthalocyanine bis [(4-aminobutyl) dimethylsilyloxi]de].

5 12. A derivative of claim 1 wherein the derivative is sulfo[2¹,2⁶,12¹,12⁶-tetraphenyldinaphtho[b,l]-7,17-dibenzo[g,q]-5,10, 15,20-tetraazoporphyrinato]silicon dihydroxide.

13. A derivative of claim 1 wherein the derivative is sulfo[2¹,2⁶,12¹,12⁶-tetraphenyldinaphtho[b,l]-7,17-dibenzo[g,q]-5,10, 15,20-tetraazoporphyrinato]silicon bis (4-Aminobutyldimethylsilyloxi]de].

14. A derivative of claim 1 wherein the derivative is sulfo[2¹,2⁶,12¹,12⁶-tetraphenyldinaphtho[b,l]-7,17-dibenzo[g,q]-5,10, 15,20-tetraazoporphyrinato]silicon bis (3-amino-propyldiisopropylsilyloxi]de].

15 15. A derivative of claim 1 wherein the derivative is sulfo[2¹,2⁶,12¹,12⁶-tetraphenyldinaphtho[b,l]-7,17-dibenzo[g,q]-5,10, 15,20-tetraazoporphyrinato]silicon bis-[(10-carbomethoxydecyl) dimethyl silyloxi]de].

16. A derivative of claim 1 wherein the derivative is sulfo[2¹,2⁶,12¹,12⁶-tetraphenyldinaphtho[b,l]-7,17-dibenzo[g,q]-5,10, 15,20-tetraazoporphyrinato]silicon bis (7-oct-1-enyldimethylsilyloxi]de].

20 17. A derivative of claim 1 wherein the derivative is sulfo silicon naphthalocyanine bis(4-aminobutyldimethyl silyloxi]de].

18. A derivative of claim 1 wherein the derivative is sulfo silicon

- 129 -

naphthalocyanine bis [10-(carbomethoxy)decyl dimethylsilyloxi-
 de].

19. A derivative of claim 1 wherein the derivative is sulfo silicon
 naphthalocyanine bis(3-aminopropyldiisopropylsilyloxi-
 de).

20. A derivative of claim 1 wherein the derivative is sulfo[2¹,2⁶,12¹,12⁶-
 5 tetraphenyldinaphtho[b,l]-7,17-dibenzo[g,q]-5,10, 15,20-tetraazoporphyrinato]silicon bis[N-
 succinamido)aminobutyldimethyl silyloxi-
 de].

21. A derivative of claim 1 wherein the derivative is sulfo[2¹,2⁶,12¹,12⁶-
 tetraphenyldinaphtho[b,l]-7,17-dibenzo[g,q]-5,10, 15,20-tetraazoporphyrinato]silicon
 bis[4[(acetylthiopropionamido)butyl] dimethylsilyloxi-
 de].

22. A derivative of claim 1 wherein the derivative is sulfo[2¹,2⁶,12¹,12⁶-
 tetraphenyldinaphtho[b,l]-7,17-dibenzo[g,q]-5,10, 15,20-tetraazoporphyrinato]silicon
 bis[4[(thiopropionamido)butyl] dimethylsilyloxi-
 de].

23. A conjugate comprising a sulfonated hybrid phthalocyanine derivative and
 a substituent.

15 24. A conjugate of claim 23 wherein the substituent is an antibody.

25. A conjugate of claim 24 wherein the antibody specifically binds to human
 chorionic gonadotropin.

26. A conjugate of claim 23 wherein the substituent is a ligand analogue.

27. The conjugate of claim 26 wherein the ligand analogue is morphine.

20 28. A method for determining the presence or amount of at least one target

- 130 -

ligand capable of competing with a ligand analogue conjugate for binding sites available on a ligand receptor, said ligand analogue conjugate comprising at least one ligand analogue coupled to a signal development element, said signal development element comprising a water soluble phthalocyanine derivative, in a fluid sample suspected of containing said target ligand

5 comprising the steps of:

a. contacting said fluid sample with said ligand analogue conjugate and said ligand receptor to form a homogeneous reaction mixture;

b. detecting bound or unbound ligand analogue conjugates in said reaction mixture using said water soluble phthalocyanine derivative; and,

10 c. relating the detectable signal to the presence or amount of said target ligand in said fluid sample.

29. A method of determining the presence or amount of at least one ligand in a fluid sample suspected of containing said target ligand comprising the steps of:

15 a. contacting said fluid sample with a receptor said receptor coupled to a signal development element comprising a water soluble phthalocyanine derivative, so that said receptor specifically binds said target ligand to form a homogeneous reaction mixture;

b. detecting bound receptor in said reaction mixture using said water soluble phthalocyanine derivative; and,

20 c. relating the detectable signal to the presence or amount of said target ligand in said fluid sample.